

Technology and Science as "Ideology"

*For Herbert Marcuse on his seventieth birthday,
July 19, 1968*

Max Weber introduced the concept of "rationality" in order to define the form of capitalist economic activity, bourgeois private law, and bureaucratic authority. Rationalization means, first of all, the extension of the areas of society subject to the criteria of rational decision. Second, social labor is industrialized, with the result that criteria of instrumental action also penetrate into other areas of life (urbanization of the mode of life, technification of transport and communication). Both trends exemplify the type of purposive-rational action, which refers to either the organization of means or choice between alternatives. Planning can be regarded as purposive-rational action of the second order. It aims at the establishment, improvement, or expansion of systems of purposive-rational action themselves.

The progressive "rationalization" of society is linked to the institutionalization of scientific and technical development. To the extent that technology and science permeate social institutions and thus transform them, old legitimations are destroyed. The secularization and "disenchantment" of action-orienting worldviews, of cultural tradition as a whole, is the obverse of the growing "rationality" of social action.

Herbert Marcuse has taken these analyses as a point of departure in order to demonstrate that the formal concept of rationality—which Weber derived from the purposive-rational action of the capitalist entrepreneur, the industrial wage laborer, the abstract legal person, and the modern administrative official

and based on the criteria of science as well as technology—has specific substantive implications. Marcuse is convinced that what Weber called "rationalization" realizes not rationality as such but rather, in the name of rationality, a specific form of unacknowledged political domination. Because this sort of rationality extends to the correct choice among strategies, the appropriate application of technologies, and the efficient establishment of systems (with *presupposed* aims in *given* situations), it removes the total social framework of interests in which strategies are chosen, technologies applied, and systems established, from the scope of reflection and rational reconstruction. Moreover, this rationality extends only to relations of possible technical control and therefore requires a type of action that implies domination, whether of nature or of society. By virtue of its structure, purposive-rational action is the exercise of control. That is why, in accordance with this rationality, the "rationalization" of the conditions of life is synonymous with the institutionalization of a form of domination whose political character becomes unrecognizable: the technical reason of a social system of purposive-rational action does not lose its political content. Marcuse's critique of Weber comes to the conclusion that

the very concept of technical reason is perhaps ideological. Not only the application of technology but technology itself is domination (of nature and men)—methodical, scientific, calculated, calculating control. Specific purposes and interests of domination are not foisted upon technology "subsequently" and from the outside; they enter the very construction of the technical apparatus. Technology is always a historical-social *project*: in it is projected what a society and its ruling interests intend to do with men and things. Such a "purpose" of domination is "substantive" and to this extent belongs to the very form of technical reason.¹

As early as 1956 Marcuse referred in a quite different context to the peculiar phenomenon that in industrially

advanced capitalist societies domination tends to lose its exploitative and oppressive character and become "rational," without political domination thereby disappearing: "domination is dependent only on the capacity and drive to maintain and extend the apparatus as a whole."² Domination is rational in that a system can be maintained which can allow itself to make the growth of the forces of production, coupled with scientific and technical progress, the basis of its legitimization although, at the same time, the level of the productive forces constitutes a potential in relation to which "the renunciations and burdens placed on individuals seem more and more unnecessary and irrational."³ In Marcuse's judgment, the objectively superfluous repression can be recognized in the "intensified subjection of individuals to the enormous apparatus of production and distribution, in the deprivatization of free time, in the almost indistinguishable fusion of constructive and destructive social labor."⁴ Paradoxically, however, this repression can disappear from the consciousness of the population because the legitimization of domination has assumed a new character: it refers to the "constantly increasing productivity and domination of nature which keeps individuals . . . living in increasing comfort."⁵

The institutionalized growth of the forces of production following from scientific and technical progress surpasses all historical proportions. From it the institutional framework draws its opportunity for legitimization. The thought that relations of production can be measured against the potential of developed productive forces is prevented because the existing relations of production present themselves as the technically necessary organizational form of a rationalized society. Here "rationality," in Weber's sense, shows its Janus face. It is no longer only a critical standard for the developmental level of the forces of production in relation to which the objectively superfluous, repressive character of historically obsolete relations of production can be exposed. It is also an apologetic standard through which these same relations of production can be justified as a functional institutional framework. Indeed, in relation to its apologetic serviceability, "rationality" is weakened as a critical standard and degraded to a corrective *within* the sys-

tem: what can still be said is at best that society is "poorly programmed." At the stage of their scientific-technical development, then, the forces of production appear to enter a new constellation with the relations of production. Now they no longer function as the basis of a critique of prevailing legitimations in the interest of political enlightenment, but become instead the basis of legitimization. This is what Marcuse conceives of as world-historically new.

But if this is the case, must not the rationality embodied in systems of purposive-rational action be understood as specifically limited? Must not the rationality of science and technology, instead of being reducible to unvarying rules of logic and method have absorbed a substantive, historically derived, and therefore transitory *a priori* structure? Marcuse answers in the affirmative:

The principles of modern science were *a priori* structured in such a way that they could serve as conceptual instruments for a universe of self-propelling, productive control; theoretical operationalism came to correspond to practical operationalism. The scientific method which led to the ever-more-effective domination of nature thus came to provide the pure concepts as well as the instrumentalities for the ever-more-effective domination of man by man *through* the domination of nature . . . Today, domination perpetuates and extends itself not only through technology but as technology, and the latter provides the great legitimation of the expanding political power, which absorbs all spheres of culture.

In this universe, technology also provides the great rationalization of the unfreedom of man and demonstrates the "technical" impossibility of being autonomous, of determining one's own life. For this unfreedom appears neither as irrational nor as political, but rather as submission to the technical apparatus which enlarges the comforts of life and increases the

productivity of labor. Technological rationality thus protects rather than cancels the legitimacy of domination and the instrumentalist horizon of reason opens on a rationally totalitarian society.⁶

Weber's "rationalization" is not only a long-term process of the transformation of social structures but simultaneously "rationalization" in Freud's sense: the true motive, the perpetuation of objectively obsolete domination, is concealed through the invocation of purposive-rational imperatives. This invocation is possible only because the rationality of science and technology is immanently one of control: the rationality of domination. Marcuse owes this concept, according to which modern science is a historical formation, equally to Husserl's treatise on the crisis of European science and Heidegger's destruction of Western metaphysics. From the materialist position, Ernst Bloch has developed the viewpoint that the rationality of modern science is, in its roots, distorted by capitalism in such a way as to rob modern technology of the innocence of a pure productive force. But Marcuse is the first to make the "political content of technical reason" the analytical point of departure for a theory of advanced capitalist society. Because he not only develops this viewpoint philosophically but also attempts to corroborate it through sociological analysis, the difficulties inherent in this conception become visible. I shall refer here to but one ambiguity contained in Marcuse's own conception.

If the phenomenon on which Marcuse bases his social analysis, i.e. the peculiar *fusion of technology and domination*, rationality and oppression, could not be interpreted otherwise than as a world "project," as Marcuse says in the language of Sartre's phenomenology, contained in the material a priori of the logic of science and technology and determined by class interest and historical situation, then social emancipation could not be conceived without a complementary revolutionary transformation of science and technology themselves. In several passages Marcuse is tempted to pursue this idea of a New

Science in connection with the promise, familiar in Jewish and Protestant mysticism, of the "resurrection of fallen nature." This theme, well-known for having penetrated into Schelling's (and Baader's) philosophy via Swabian Pietism, returns in Marx's *Paris Manuscripts*, today constitutes the central thought of Bloch's philosophy, and, in reflected forms, also directs the more secret hopes of Walter Benjamin, Max Horkheimer, and Theodor W. Adorno. It is also present in Marcuse's thought:

The point which I am trying to make is that science, by *virtue of its own method* and concepts, has projected and promoted a universe in which the domination of nature has remained linked to the domination of man—a link which tends to be fatal to this universe as a whole. Nature, scientifically comprehended and mastered, reappears in the technical apparatus of production and destruction which sustains and improves the life of the individuals while subordinating them to the masters of the apparatus. Thus the rational hierarchy merges with the social one. If this is the case, then the change in the direction of progress, which might sever this fatal link, would also affect the very structure of science—the scientific project. Its hypotheses, without losing their rational character, would develop in an essentially different experimental context (that of a pacified world); consequently, science would arrive at essentially different concepts of nature and establish essentially different facts.⁷

In a logical fashion Marcuse envisages not only different modes of theory formation but a different scientific methodology in general. The transcendental framework within which nature would be made the object of a new experience would then no longer be the functional system of instrumental action. The viewpoint of possible technical control would be replaced by one of preserving, fostering, and releasing the potentialities of nature: "there are two kinds of mastery: a

repressive and a liberating one."⁸ To this view it must be objected that modern science can be interpreted as a historically unique project only if at least one alternative project is thinkable. And, in addition, an alternative New Science would have to include the definition of a New Technology. This is a sobering consideration because technology, if based at all on a project, can only be traced back to a "project" of the human species as a whole, and not to one that could be historically surpassed.

Arnold Gehlen has pointed out in what seems to me conclusive fashion that there is an immanent connection between the technology known to us and the structure of purposive-rational action. If we comprehend the behavioral system of action regulated by its own results as the conjunction of rational decision and instrumental action, then we can reconstruct the history of technology from the point of view of the step-by-step objectivation of the elements of that very system. In any case technological development lends itself to being interpreted as though the human species had taken the elementary components of the behavioral system of purposive-rational action, which is primarily rooted in the human organism, and projected them one after another onto the plane of technical instruments, thereby unburdening itself of the corresponding functions.⁹ At first the functions of the motor apparatus (hands and legs) were augmented and replaced, followed by energy production (of the human body), the functions of the sensory apparatus (eyes, ears, and skin), and finally by the functions of the governing center (the brain). Technological development thus follows a logic that corresponds to the structure of purposive-rational action regulated by its own results, which is in fact the structure of *work*. Realizing this, it is impossible to envisage how, as long as the organization of human nature does not change and as long therefore as we have to achieve self-preservation through social labor and with the aid of means that substitute for work, we could renounce technology, more particularly *our* technology, in favor of a qualitatively different one.

Marcuse has in mind an alternative *attitude* to nature,

but it does not admit of the idea of a New Technology. Instead of treating nature as the object of possible technical control, we can encounter her as an opposing partner in a possible interaction. We can seek out a fraternal rather than an exploited nature. At the level of an as yet incomplete intersubjectivity we can impure subjectivity to animals and plants, even to minerals, and try to communicate with nature instead of merely processing her under conditions of severed communication. And the idea that a still enchainèd subjectivity of nature cannot be unbound until men's communication among themselves is free from domination has retained, to say the least, a singular attraction. Only if men could communicate without compulsion and each could recognize himself in the other, could mankind possibly recognize nature as another subject: not, as idealism would have it, as its Other, but as a subject of which mankind itself is the Other.

Be that as it may, the achievements of technology, which are indispensable as such, could surely not be substituted for by an awakened nature. The alternative to existing technology, the project of nature as opposing partner instead of object, refers to an alternative structure of action: to symbolic interaction in distinction to purposive-rational action. This means, however, that the two projects are projections of work and of language, i.e. projects of the human species as a whole, and not of an individual epoch, a specific class, or a surpassable situation. The idea of a New Science will not stand up to logical scrutiny any more than that of a New Technology, if indeed science is to retain the meaning of modern science inherently oriented to possible technical control. For this function, as for scientific-technical progress in general, there is no more "human" substitute.

Marcuse himself seems to doubt whether it is meaningful to relativize as a "project" the rationality of science and technology. In many passages of *One-Dimensional Man*, revolutionizing technological rationality means only a transformation of the institutional framework which would leave untouched the forces of production as such. The structure of scientific-technical progress would be conserved, and only the governing

values would be changed. New values would be translated into technically solvable tasks. The *direction* of this progress would be new, but the standard of rationality itself would remain unchanged:

Technics, as a universe of instrumentalities, may increase the weakness as well as the power of man. At the present stage, he is perhaps more powerless over his own apparatus than he ever was before.¹⁰

This sentence reinstates the political innocence of the forces of production. Here Marcuse is only renewing the classical definition of the relationship between the productive forces and the production relations. But in so doing, he is as far from coming to grips with the new constellation at which he is aiming as he was with the assertion that the productive forces are thoroughly corrupted in their political implications. What is singular about the "rationality" of science and technology is that it characterizes the growing potential of self-surpassing productive forces which continually threaten the institutional framework and *at the same time*, set the standard of legitimization for the production relations that restrict this potential. The dichotomy of this rationality cannot be adequately represented either by historicizing the concept or by returning to the orthodox view: neither the model of the original sin of scientific-technical progress nor that of its innocence do it justice. The most sensible formulation of the matter in question seems to me to be the following:

The technological *a priori* is a political *a priori* inasmuch as the transformation of nature involves that of man, and inasmuch as the "man-made creations" issue from and reenter a societal ensemble. One may still insist that the machinery of the technological universe is "as such" indifferent towards political ends—it can revolutionize or retard a society. An electronic computer can serve equally in capitalist or socialist administrations; a cyclotron can be an

equally efficient tool for a war party or a peace party. . . . However, when technics becomes the universal form of material production, it circumscribes an entire culture; it projects a historical totality—a “world.”¹¹

The difficulty, which Marcuse has only obscured with the notion of the political content of technical reason, is to determine in a categorially precise manner the meaning of the expansion of the rational form of science and technology, i.e. the rationality embodied in systems of purposive-rational action, to the proportions of a life form, of the “historical totality” of a life-world. This is the same process that Weber meant to designate and explain as the rationalization of society. I believe that neither Weber nor Marcuse has satisfactorily accounted for it. Therefore I should like to attempt to reformulate Weber's concept of rationalization in another frame of reference in order to discuss on this new basis Marcuse's critique of Weber, as well as his thesis of the double function of scientific-technical progress (as productive force and as ideology). I am proposing an interpretative scheme that, in the format of an essay, can be introduced but not seriously validated with regard to its utility. The historical generalizations thus serve only to clarify this scheme and are no substitute for its scientific substantiation.

By means of the concept of “rationalization” Weber attempted to grasp the repercussions of scientific-technical progress on the institutional framework of societies engaged in “modernization.” He shared this interest with the classical sociological tradition in general, whose pairs of polar concepts all revolve about the same problem: how to construct a conceptual model of the institutional change brought about by the extension of subsystems of purposive-rational action. Status and contract, *Geemeinschaft* and *Gesellschaft*, mechanical and organic solidarity, informal and formal groups, primary and secondary groups, culture and civilization, traditional and bureaucratic authority, sacral and secular associations, military and industrial

society, status group and class—all of these pairs of concepts represent as many attempts to grasp the structural change of the institutional framework of a traditional society on the way to becoming a modern one. Even Parsons' catalog of possible alternatives of value-orientations belongs in the list of these attempts, although he would not admit it. Parsons claims that his list systematically represents the decisions between alternative value-orientations that must be made by the subject of any action whatsoever, regardless of the particular or historical context. But if one examines the list, one can scarcely overlook the historical situation of the inquiry on which it is based. The four pairs of alternative value-orientations,

affectivity versus *affective neutrality*,
particularism versus *universalism*,
scription versus *achievement*,
diffuseness versus *specificity*,

which are supposed to take into account *all* possible fundamental decisions, are tailored to an analysis of *one* historical process. In fact they define the relative dimensions of the modernization of dominant attitudes in the transition from traditional to modern society. Subsystems of purposive-rational action do indeed demand orientation to the postponement of gratification, universal norms, individual achievement and active mastery, and specific and analytic relationships, rather than to the opposite orientations.

In order to reformulate what Weber called “rationalization,” I should like to go beyond the subjective approach that Parsons shares with Weber and propose another categorial framework. I shall take as my starting point the fundamental distinction between *work* and *interaction*.¹²

By “work” or *purposive-rational action* I understand either instrumental action or rational choice or their conjunction. Instrumental action is governed by *technical rules* based

on empirical knowledge. In every case they imply conditional predictions about observable events, physical or social. These predictions can prove correct or incorrect. The conduct of rational choice is governed by *strategies* based on analytic knowledge. They imply deductions from preference rules (value systems) and decision procedures; these propositions are either correctly or incorrectly deduced. *Purposive-rational* action realizes defined goals under given conditions. But while instrumental action organizes means that are appropriate or inappropriate according to criteria of an effective control of reality, strategic action depends only on the correct evaluation of possible alternative choices, which results from calculation supplemented by values and maxims.

By "interaction," on the other hand, I understand *communicative action*, symbolic interaction. It is governed by binding *consensual norms*, which define reciprocal expectations about behavior and which must be understood and recognized by at least two acting subjects. Social norms are enforced through sanctions. Their meaning is objectified in ordinary language communication. While the validity of technical rules and strategies depends on that of empirically true or analytically correct propositions, the validity of social norms is grounded only in the intersubjectivity of the mutual understanding of intentions and secured by the general recognition of obligations. Violation of a rule has a different consequence according to type. *Incompetent* behavior, which violates valid technical rules or strategies, is condemned per se to failure through lack of success; the "punishment" is built, so to speak, into its rebuff by reality. *Deviant* behavior, which violates consensual norms, provokes sanctions that are connected with the rules only externally, that is by convention. Learned rules of purposive-rational action supply us with *skills*, internalized norms with *personality structures*. Skills put us in a position to solve problems; motivations allow us to follow norms. The diagram below summarizes these definitions. They demand a more precise explanation, which I cannot give here. It is above all the bottom column which I am neglecting here, and it refers to the very

problem for whose solution I am introducing the distinction between work and interaction.

Institutional framework:		Systems of purposive-rational (instrumental and strategic) action	
action-orienting rules	social norms	technical rules	
level of definition	intersubjectively shared ordinary language	context-free language	
type of definition	reciprocal expectations about behavior	conditional predictions conditional imperatives	
mechanisms of acquisition	role internalization	learning of skills and qualifications	
function of action type	maintenance of institutions (conformity to norms on the basis of reciprocal enforcement)	problem-solving (goal attainment, defined in means-ends relations)	
sanctions against violation of rules	punishment on the basis of conventional sanctions: failure against authority	inefficacy: failure in reality	
"rationalization"	emancipation, individualization; extension of communication free of domination	growth of productive forces; extension of power of technical control	

In terms of the two types of action we can distinguish between social systems according to whether purposive-rational action or interaction predominates. The institutional framework of a society consists of norms that guide symbolic interaction. But there are subsystems such as (to keep to Weber's examples) the economic system or the state apparatus, in which primarily sets of purposive-rational action are institutionalized. These contrast with subsystems such as family and kinship structures, which, although linked to a number of tasks and skills, are primarily based on moral rules of interaction. So I shall dis-

tinguish generally at the analytic level between (1) the *institutional framework* of a society or the sociocultural life-world and (2) the *subsystems of purposive-rational action* that are "embedded" in it. Insofar as actions are determined by the institutional framework they are both guided and enforced by norms. Insofar as they are determined by subsystems of purposive-rational action, they conform to patterns of instrumental or strategic action. Of course, only institutionalization can guarantee that such action will in fact follow definite technical rules and expected strategies with adequate probability.

With the help of these distinctions we can reformulate Weber's concept of "rationalization".

The term "traditional society" has come to denote all social systems that generally meet the criteria of civilizations. The latter represent a specific stage in the evolution of the human species. They differ in several traits from more primitive social forms: (1) A centralized ruling power (state organization of political power in contrast to tribal organization); (2) The division of society into socioeconomic classes (distribution to individuals of social obligations and rewards according to class membership and not according to kinship status); (3) The prevalence of a central worldview (myth, complex religion) to the end of legitimating political power (thus converting power into authority). Civilizations are established on the basis of a relatively developed technology and of division of labor in the social process of production, which make possible a surplus product, i.e. a quantity of goods exceeding that needed for the satisfaction of immediate and elementary needs. They owe their existence to the solution of the problem that first arises with the production of a surplus product, namely, how to distribute wealth and labor both unequally and yet legitimately according to criteria other than those generated by a kinship system.¹³

In our context it is relevant that despite considerable differences in their level of development, civilizations, based on an economy dependent on agriculture and craft production, have tolerated technical innovation and organizational improve-

ment only within definite limits. One indicator of the traditional limits to the development of the forces of production is that until about three hundred years ago no major social system had produced more than the equivalent of a maximum of two hundred dollars per capita per annum. The stable pattern of a precapitalist mode of production, preindustrial technology, and premodern science makes possible a typical relation of the institutional framework to subsystems of purposive-rational action. For despite considerable progress, these subsystems, developing out of the system of social labor and its stock of accumulated technically exploitable knowledge, never reached that measure of extension after which their "rationality" would have become an open threat to the authority of the cultural traditions that legitimate political power. The expression "traditional society" refers to the circumstance that the institutional framework is grounded in the unquestionable underpinning of legitimization constituted by mythical, religious or metaphysical interpretations of reality—cosmic as well as social—as a whole. "Traditional" societies exist as long as the development of subsystems of purposive-rational action keep within the limits of the legitimating efficacy of cultural traditions.¹⁴ This is the basis for the "superiority" of the institutional framework, which does not preclude structural changes adapted to a potential surplus generated in the economic system but does preclude critically challenging the traditional form of legitimization. This immunity is a meaningful criterion for the delimitation of traditional societies from those which have crossed the threshold to modernization.

The "superiority criterion," consequently, is applicable to all forms of class society organized as a state in which principles of universally valid rationality (whether of technical or strategic means-ends relations) have not explicitly and successfully called into question the cultural validity of intersubjectively shared traditions, which function as legitimations of the political system. It is only since the capitalist mode of production has equipped the economic system with a self-propelling mechanism that ensures long-term continuous growth (despite crises) in the productivity of labor that the introduction of

new technologies and strategies, i.e. innovation as such, has been institutionalized. As Marx and Schumpeter have proposed in their respective theories, the capitalist mode of production can be comprehended as a mechanism that guarantees the *permanent* expansion of subsystems of purposive-rational action and thereby overturns the traditionalist "superiority" of the institutional framework to the forces of production. Capitalism is the first mode of production in world history to institutionalize self-sustaining economic growth. It has generated an industrial system that could be freed from the institutional framework of capitalism and connected to mechanisms other than that of the utilization of capital in private form.

What characterizes the passage from traditional society to society commencing the process of modernization is *not* that structural modification of the institutional framework is necessitated under the pressure of relatively developed productive forces, for that is the mechanism of the evolution of the species from the very beginning. What is new is a level of development of the productive forces that makes permanent the extension of subsystems of purposive-rational action and thereby calls into question the traditional form of the legitimization of power. The older mythic, religious, and metaphysical worldviews obey the logic of interaction contexts. They answer the central questions of men's collective existence and of individual life history. Their themes are justice and freedom, violence and oppression, happiness and gratification, poverty, illness, and death. Their categories are victory and defeat, love and hate, salvation and damnation. Their logic accords with the grammar of systematically distorted communication and with the fateful causality of dissociated symbols and suppressed motives.¹⁵ The rationality of language games, associated with communicative action, is confronted at the threshold of the modern period with the rationality of means-ends relations, associated with instrumental and strategic action. As soon as this confrontation can arise, the end of traditional society is in sight: the traditional form of legitimization breaks down.

Capitalism is defined by a mode of production that not only poses this problem but also solves it. It provides a legitima-

tion of domination which is no longer called down from the lofty heights of cultural tradition but instead summoned up from the base of social labor. The institution of the market, in which private property owners exchange commodities—including the market on which propertyless private individuals exchange their labor power as their only commodity—promises that exchange relations will be and are just owing to equivalence. Even this bourgeois ideology of justice, by adopting the category of reciprocity, still employs a relation of communicative action as the basis of legitimization. But the principle of reciprocity is now the organizing principle of the sphere of production and reproduction itself. Thus on the base of a market economy, political domination can be legitimated henceforth "from below" rather than "from above" (through invocation of cultural tradition).

If we suppose that the division of society into socio-economic classes derives from the differential distribution among social groups of the relevant means of production, and that this distribution itself is based on the institutionalization of relations of social force, then we may assume that in all civilizations this institutional framework has been identical with the system of political domination: traditional authority was political authority. Only with the emergence of the capitalist mode of production can the legitimization of the institutional framework be linked immediately with the system of social labor. Only then can the property order change from a *political relation to a production relation*, because it legitimates itself through the rationality of the market, the ideology of exchange society, and no longer through a legitimate power structure. It is now the political system which is justified in terms of the legitimate relations of production: this is the real meaning and function of rationalist natural law from Locke to Kant.¹⁶ The institutional framework of society is only meditately political and immediately economic (the bourgeois constitutional state as "superstructure").

The superiority of the capitalist mode of production to its predecessors has these two roots: the establishment of an economic mechanism that renders permanent the expansion of

subsystems of purposive-rational action, and the creation of an economic legitimization by means of which the political system can be adapted to the new requisites of rationality brought about by these developing subsystems. It is this process of adaptation that Weber comprehends as "rationalization." Within it we can distinguish between two tendencies: rationalization "from below" and rationalization "from above."

A permanent pressure for adaptation arises from below as soon as the new mode of production becomes fully operative through the institutionalization of a domestic market for goods and labor power and of the capitalist enterprise. In the system of social labor this institutionalization ensures cumulative progress in the forces of production and an ensuing horizontal extension of subsystems of purposive-rational action—at the cost of economic crises, to be sure. In this way traditional structures are increasingly subordinated to conditions of instrumental or strategic rationality: the organization of labor and of trade, the network of transportation, information, and communication, the institutions of private law, and, starting with financial administration, the state bureaucracy. Thus arises the substructure of a society under the compulsion of modernization. The latter eventually widens to take in all areas of life: the army, the school system, health services, and even the family. Whether in city or country, it induces an urbanization of the *form of life*. That is, it generates subcultures that train the individual to be able to "switch over" at any moment from an interaction context to purposive-rational action.

This pressure for rationalization coming from below is met by a compulsion to rationalize coming from above. For, measured against the new standards of purposive rationality, the power-legitimating and action-orienting traditions—especially mythological interpretations and religious worldviews—lose their cogency. On this level of generalization, what Weber termed "secularization" has two aspects. First, traditional worldviews and objections lose their power and validity *as myth*, *as* public religion, *as* customary ritual, *as* justifying metaphysics, *as* unquestionable tradition. Instead, they are reshaped into sub-

jective belief systems and ethics which ensure the private cogency of modern value-orientations (the "protestant ethic"). Second, they are transformed into constructions that do both at once: criticize tradition and reorganize the released material of tradition according to the principles of formal law and the exchange of equivalents (rationalist natural law). Having become fragile, existing legitimizations are replaced by new ones. The latter emerge from the critique of the dogmatism of traditional interpretations of the world and claim a scientific character. Yet they retain legitimating functions, thereby keeping actual power relations inaccessible to analysis and to public consciousness. It is in this way that ideologies in the restricted sense first came into being. They replace traditional legitimations of power by appearing in the mantle of modern science and by deriving their justification from the critique of ideology. Ideologies are coeval with the critique of ideology. In this sense there can be no prebourgeois "ideologies."

In this connection modern science assumes a singular function. In distinction from the philosophical sciences of the older sort, the empirical sciences have developed since Galileo's time within a methodological frame of reference that reflects the transcendental viewpoint of possible technical control. Hence the modern sciences produce knowledge which through its *form* (and not through the subjective intention of scientists) is technically exploitable knowledge, although the possible applications generally are realized afterwards. Science and technology were not interdependent until late into the nineteenth century. Until then modern science did not contribute to the acceleration of technical development nor, consequently, to the pressure toward rationalization from below. Rather, its contribution to the modernization process was indirect. Modern physics gave rise to a philosophical approach that interpreted nature and society according to a model borrowed from the natural sciences and induced, so to speak, the mechanistic world-view of the seventeenth century. The reconstruction of classical natural law was carried out in this framework. This modern natural law was the basis of the bourgeois revolutions of the

seventeenth, eighteenth, and nineteenth centuries, through which the old legitimations of the power structure were finally destroyed.¹⁷

By the middle of the nineteenth century the capitalist mode of production had developed so fully in England and France that Marx was able to identify the locus of the institutional framework of society in the relations of production and at the same time criticize the legitimating basis constituted by the exchange of equivalents. He carried out the critique of bourgeois ideology in the form of *political economy*. His labor theory of value destroyed the semblance of freedom, by means of which the legal institution of the free labor contract had made unrecognizable the relationship of social force that underlay the wage-labor relationship. Marcuse's criticism of Weber is that the latter, disregarding this Marxian insight, upholds an abstract concept of rationalization, which not merely fails to express the specific class content of the adaptation of the institutional framework to the developing systems of purposive-rational action, but conceals it. Marcuse knows that the Marxian analysis can no longer be applied as it stands to advanced capitalist society, with which Weber was already confronted. But he wants to show through the example of Weber that the evolution of modern society in the framework of state-regulated capitalism cannot be conceptualized if liberal capitalism has not been analyzed adequately.

Since the last quarter of the nineteenth century two developmental tendencies have become noticeable in the most advanced capitalist countries: an increase in state intervention in order to secure the system's stability, and a growing interdependence of research and technology, which has turned the sciences into the leading productive force. Both tendencies have destroyed the particular constellation of institutional framework and subsystems of purposive-rational action which characterized liberal capitalism, thereby eliminating the conditions relevant for the application of political economy in the version correctly formulated by Marx for liberal capitalism. I believe that Marcuse's basic thesis, according to which technology and science

today also take on the function of legitimating political power, is the key to analyzing the changed constellation.

The permanent regulation of the economic process by means of state intervention arose as a defense mechanism against the dysfunctional tendencies, which threaten the system, that capitalism generates when left to itself. Capitalism's actual development manifestly contradicted the capitalist idea of a bourgeois society, emancipated from domination, in which power is neutralized. The root ideology of just exchange, which Marx unmasked in theory, collapsed in practice. The form of capital utilization through private ownership could only be maintained by the governmental corrective of a social and economic policy that stabilized the business cycle. The institutional framework of society was repoliticized. It no longer coincides immediately with the relations of production, i.e. with an order of private law that secures capitalist economic activity and the corresponding general guarantees of order provided by the bourgeois state. But this means a change in the relation of the economy to the political system: politics is no longer *only* a phenomenon of the superstructure. If society no longer "autonomously" perpetuates itself through self-regulation as a sphere preceding and lying at the basis of the state—and its ability to do so was the really novel feature of the capitalist mode of production—then society and the state are no longer in the relationship that Marxian theory had defined as that of base and superstructure. Then, however, a critical theory of society can no longer be constructed in the exclusive form of a critique of political economy. A point of view that methodically isolates the economic laws of motion of society can claim to grasp the overall structure of social life in its essential categories only as long as politics depends on the economic base. It becomes inapplicable when the "base" has to be comprehended as in itself a function of governmental activity and political conflicts. According to Marx, the critique of political economy was the theory of bourgeois society only as *critique of ideology*. If, however, the ideology of just exchange disintegrates, then the power structure can no longer be criticized *immediately* at the level of the relations of production.

With the collapse of this ideology, political power requires a new legitimization. Now since the power indirectly exercised over the exchange process is itself operating under political control and state regulation, legitimization can no longer be derived from the unpolitical order constituted by the relations of production. To this extent the requirement for direct legitimization, which exists in precapitalist societies, reappears. On the other hand, the resuscitation of immediate political domination (in the traditional form of legitimization on the basis of cosmological worldviews) has become impossible. For traditions have already been disempowered. Moreover, in industrially developed societies the results of bourgeois emancipation from immediate political domination (civil and political rights and the mechanism of general elections) can be fully ignored only in periods of reaction. Formally democratic government in systems of state-regulated capitalism is subject to a need for legitimization which cannot be met by a return to a prebourgeois form. Hence the ideology of free exchange is replaced by a substitute program. The latter is oriented not to the social results of the institution of the market but to those of government action designed to compensate for the dysfunctions of free exchange. This policy combines the element of the bourgeois ideology of achievement (which, however, displaces asignment of status according to the standard of individual achievement from the market to the school system) with a guaranteed minimum level of welfare, which offers secure employment and a stable income. This substitute program obliges the political system to maintain stabilizing conditions for an economy that guards against risks to growth and guarantees social security and the chance for individual upward mobility. What is needed to this end is latitude for manipulation by state interventions that, at the cost of limiting the institutions of private law, secure the private form of capital utilization and bind the masses' loyalty to this form.

Insofar as government action is directed toward the economic system's stability and growth, politics now takes on a peculiarly negative character. For it is oriented toward the elimination of dysfunctions and the avoidance of risks that

threaten the system: not, in other words, toward the realization of *practical goals* but toward the *solution of technical problems*. Claus Offe pointed this out in his paper at the 1968 Frankfurt Sociological Conference:

In this structure of the relation of economy and the state, "politics" degenerates into action that follows numerous and continually emerging "avoidance imperatives": the mass of differentiated social-scientific information that flows into the political system allows both the early identification of risk zones and the treatment of actual dangers. What is new about this structure is . . . that the risks to stability built into the mechanism of private capital utilization in highly organized markets, risks that can be manipulated, prescribe preventive actions and measures that *must* be accepted as long as they are to accord with the existing legitimization resources (i.e., substitute program).¹⁸

Offe perceives that through these preventive action-orientations, government activity is restricted to administratively soluble technical problems, so that practical questions evaporate, so to speak. *Practical substance is eliminated.*

Old-style politics was forced, merely through its traditional form of legitimization, to define itself in relation to practical goals: the "good life" was interpreted in a context defined by interaction relations. The same still held for the ideology of bourgeois society. The substitute program prevailing today, in contrast, is aimed exclusively at the functioning of a manipulated system. It eliminates practical questions and therewith precludes discussion about the adoption of standards; the latter could emerge only from a democratic decision-making process. The solution of technical problems is not dependent on public discussion. Rather, public discussions could render problematic the framework within which the tasks of government action present themselves as technical ones. Therefore the new politics of state interventionism requires a depoliticization of the mass

of the population. To the extent that practical questions are eliminated, the public realm also loses its political function. At the same time, the institutional framework of society is still distinct from the systems of purposive-rational action themselves. Its organization continues to be a problem of *practice* linked to communication, not one of *technology*, no matter how scientifically guided. Hence, the bracketing out of practice associated with the new kind of politics is not automatic. The substitute program, which legitimates power today, leaves unfilled a vital need for legitimization: how will the depoliticization of the masses be made plausible to them? Marcuse would be able to answer: by having technology and science *also* take on the role of an ideology.

Since the end of the nineteenth century the other developmental tendency characteristic of advanced capitalism has become increasingly momentous: the scientization of technology. The institutional pressure to augment the productivity of labor through the introduction of new technology has always existed under capitalism. But innovations depended on sporadic inventions, which, while economically motivated, were still fortuitous in character. This changed as technical development entered into a feedback relation with the progress of the modern sciences. With the advent of large-scale industrial research, science, technology, and industrial utilization were fused into a system. Since then, industrial research has been linked up with research under government contract, which primarily promotes scientific and technical progress in the military sector. From there information flows back into the sectors of civilian production. Thus technology and science become a leading productive force, rendering inoperative the conditions for Marx's labor theory of value. It is no longer meaningful to calculate the amount of capital investment in research and development on the basis of the value of unskilled (simple) labor power, when scientific-technical progress has become an independent source of surplus value, in relation to which the only source of surplus value considered by Marx, namely the labor power of the immediate producers, plays an ever smaller role.¹⁹

As long as the productive forces were visibly linked to the rational decisions and instrumental action of men engaged in social production, they could be understood as the potential for a growing power of technical control and not be confused with the institutional framework in which they are embedded. However, with the institutionalization of scientific-technical progress, the potential of the productive forces has assumed a form owing to which men lose consciousness of the dualism of work and interaction.

It is true that social interests still determine the direction, functions, and pace of technical progress. But these interests define the social system so much as a whole that they coincide with the interest in maintaining the system. *As such* the private form of capital utilization and a distribution mechanism for social rewards that guarantees the loyalty of the masses are removed from discussion. The quasi-autonomous progress of science and technology then appears as an independent variable on which the most important single system variable, namely economic growth, depends. Thus arises a perspective in which the development of the social system *seems* to be determined by the logic of scientific-technical progress. The imminent law of this progress seems to produce objective exigencies, which must be obeyed by any politics oriented toward functional needs. But when this semblance has taken root effectively, then propaganda can refer to the role of technology and science in order to explain and legitimate why in modern societies the process of democratic decision-making about practical problems loses its function and "must" be replaced by plebiscitary decisions about alternative sets of leaders of administrative personnel. This technocracy thesis has been worked out in several versions on the intellectual level.²⁰ What seems to me more important is that it can also become a background ideology that penetrates into the consciousness of the depoliticized mass of the population, where it can take on legitimating power.²¹ It is a singular achievement of this ideology to detach society's self-understanding from the frame of reference of communicative action and from the concepts of symbolic interaction and replace it with a scientific model. Accordingly the culturally de-

fined self-understanding of a social life-world is replaced by the self-reification of men under categories of purposive-rational action and adaptive behavior.

The model according to which the planned reconstruction of society is to proceed is taken from systems analysis. It is possible in principle to comprehend and analyze individual enterprises and organizations, even political or economic subsystems and social systems as a whole, according to the pattern of self-regulated systems. It makes a difference, of course, whether we use a cybernetic frame of reference for analytic purposes or *organize* a given social system in accordance with this pattern as a man-machine system. But the transferral of the analytic model to the level of social organization is implied by the very approach taken by systems analysis. Carrying out this intention of an instinct-like self-stabilization of social systems yields the peculiar perspective that the structure of one of the two types of action, namely the behavioral system of purposive-rational action, not only predominates over the institutional framework but gradually absorbs communicative action as such. If, with Arnold Gehlen, one were to see the inner logic of technical development as the step-by-step disconnection of the behavioral system of purposive-rational action from the human organism and its transferral to machines, then the technocratic intention could be understood as the last stage of this development. For the first time man can not only, as *homo faber*, completely objectify himself and confront the achievements that have taken on independent life in his products; he can in addition, as *homo fabricatus*, be integrated into his technical apparatus if the structure of purposive-rational action can be successfully reproduced on the level of social systems. According to this idea the institutional framework of society—which previously was rooted in a different type of action—would now, in a fundamental reversal, be *absorbed* by the subsystems of purposive-rational action, which were embedded in it.

Of course this technocratic intention has not been realized anywhere even in its beginnings. But it serves as an ideology for the new polities, which is adapted to technical

problems and brackets out practical questions. Furthermore it does correspond to certain developmental tendencies that could lead to a creeping erosion of what we have called the institutional framework. The manifest domination of the authoritarian state gives way to the manipulative compulsions of technical-operational administration. The moral realization of a normative order is a function of communicative action oriented to shared cultural meaning and presupposing the internalization of values. It is increasingly supplanted by conditioned behavior, while large organizations as such are increasingly patterned after the structure of purposive-rational action. The industrially most advanced societies seem to approximate the model of behavioral control steered by external stimuli rather than guided by norms. Indirect control through fabricated stimuli has increased, especially in areas of putative subjective freedom (such as electoral, consumer, and leisure behavior). Sociopsychologically, the era is typified less by the authoritarian personality than by the restructuring of the superego. The increase in *adaptive behavior* is, however, only the obverse of the dissolution of the sphere of linguistically mediated interaction by the structure of purposive-rational action. This is paralleled subjectively by the disappearance of the difference between purposive-rational action and interaction from the consciousness not only of the sciences of man, but of men themselves. The concealment of this difference proves the ideological power of the technocratic consciousness.

In consequence of the two tendencies that have been discussed, capitalist society has changed to the point where two key categories of Marxian theory, namely class struggle and ideology, can no longer be employed as they stand.

It was on the basis of the capitalist mode of production that the struggle of social classes as such was first constituted, thereby creating an objective situation from which the class structure of traditional society, with its immediately political constitution, could be *recognized* in retrospect. State-regulated capitalism, which emerged from a reaction against the dangers to the system produced by open class antagonism, suspends

class conflict. The system of advanced capitalism is so defined by a policy of securing the loyalty of the wage-earning masses through rewards, that is, by avoiding conflict, that the conflict still built into the structure of society in virtue of the private mode of capital utilization is the very area of conflict which has the greatest probability of remaining latent. It recedes behind others, which, while conditioned by the mode of production, can no longer assume the form of class conflicts. In the paper cited, Claus Offe has analyzed this paradoxical state of affairs, showing that open conflicts about social interests break out with greater probability the less their frustration has dangerous consequences for the system. The needs with the greatest conflict potential are those on the periphery of the area of state intervention. They are far from the central conflict being kept in a state of latency and therefore they are not seen as having priority among dangers to be warded off. Conflicts are set off by these needs to the extent that disproportionately scattered state interventions produce backward areas of development and corresponding disparity tensions:

The disparity between areas of life grows above all in view of the differential state of development obtaining between the actually institutionalized and the possible level of technical and social progress.

The disproportion between the most modern apparatuses for industrial and military purposes and the stagnating organization of the transport, health, and educational systems is just as well known an

example of this disparity between areas of life as is the contradiction between rational planning and regulation in taxation and finance policy and the unplanned, haphazard development of cities and regions. Such contradictions can no longer be designated accurately as antagonisms between classes, yet they can still be interpreted as results of the still dominant process of the private utilization of capital and of a specifically capitalist power structure.

In this process the prevailing interests are those which,

without being clearly localizable, are in a position, on the basis of the established mechanism of the capitalist economy, to react to disturbances of the conditions of their stability by producing risks relevant to the system as a whole.²²

The interests bearing on the maintenance of the mode of production can no longer be "clearly localized" in the social system as class interests. For the power structure, aimed as it is at avoiding dangers to the system, precisely excludes "domination" (as immediate political or economically mediated social force) exercised in such a manner that one class subject *controls* another as an identifiable group.

This means not that class antagonisms have been abolished but that they have become *latent*. Class distinctions persist in the form of subcultural traditions and corresponding differences not only in the standard of living and life style but also in political attitude. The social structure also makes it probable that the class of wage earners will be hit harder than other groups by social disparities. And finally, the generalized interest in perpetuating the system is still anchored today, on the level of immediate life chances, in a structure of privilege. The concept of an interest that has become *completely* independent of living subjects would cancel itself out. But with the deflection of dangers to the system in state-regulated capitalism, the political system has incorporated an interest—which transcends latent class boundaries—in preserving the compensatory distribution façade.

Furthermore, the displacement of the conflict zone from the class boundary to the underprivileged regions of life does not mean at all that serious conflict potential has been dispensed of. As the extreme example of racial conflict in the United States shows, so many consequences of disparity can accumulate in certain areas and groups that explosions resembling civil war can occur. But unless they are connected with protest potential from other sectors of society no conflicts arising from such underprivilege can really overturn the system—they can only provoke it to sharp reactions incompatible with

formal democracy. For underprivileged groups are not social classes, nor do they ever even potentially represent the mass of the population. Their *disfranchisement* and pauperization no longer coincide with *exploitation*, because the system does not live off their labor. They can represent at most a past phase of exploitation. But they cannot through the withdrawal of cooperation attain the demands that they legitimately put forward. That is why these demands retain an appellative character. In the case of long-term nonconsideration of their legitimate demands underprivileged groups can in extreme situations react with desperate destruction and self-destruction. But as long as no coalitions are made with privileged groups, such a civil war lacks the chance of revolutionary success that class struggle possesses.

With a series of restrictions this model seems applicable even to the relations between the industrially advanced nations and the formerly colonial areas of the Third World. Here, too, growing disparity leads to a form of underprivilege that in the future surely will be increasingly less comprehensible through categories of exploitation. Economic interests are replaced on this level, however, with immediately military ones.

Be that as it may, in advanced capitalist society deprived and privileged groups no longer confront each other as socio-economic classes—and to some extent the boundaries of underprivilege are no longer even specific to groups and instead run across population categories. Thus the fundamental relation that existed in all traditional societies and that came to the fore under liberal capitalism is mediated, namely the class antagonism between partners who stand in an institutionalized relationship of force, economic exploitation, and political oppression to one another, and in which communication is so distorted and restricted that the legitimations serving as an ideological veil cannot be called into question. Hegel's concept of the ethical totality of a living relationship which is sundered because one subject does not reciprocally satisfy the needs of the other is no longer an appropriate model for the mediated class structure of organized, advanced capitalism. The suspended dialectic of the ethical generates the peculiar semblance of *post-histoire*. The

reason is that relative growth of the productive forces no longer represents *eo ipso* a potential that points beyond the existing framework with emancipatory consequences, in view of which legitimations of an existing power structure become enfeebled. For the leading productive force—controlled scientific-technical progress itself—has now become the basis of legitimization. Yet this new form of legitimization has cast off the old shape of *ideology*.

Technocratic consciousness is, on the one hand, "less ideological" than all previous ideologies. For it does not have the opaque force of a delusion that only transfigures the implementation of interests. On the other hand today's dominant, rather glassy background ideology, which makes a fetish of science, is more irresistible and farther-reaching than ideologies of the old type. For with the veiling of practical problems it not only justifies a *particular class's* interest in domination and represses *another class's* partial need for emancipation, but affects the human race's emancipatory interest as such.

Technocratic consciousness is not a rationalized, wish-fulfilling fantasy, not an "illusion" in Freud's sense, in which a system of interaction is either represented or interpreted and grounded. Even bourgeois ideologies could be traced back to a basic pattern of just interactions, free of domination and mutually satisfactory. It was these ideologies which met the criteria of wish-fulfillment and substitute gratification; the communication on which they were based was so limited by repressions that the relation of force once institutionalized as the capital-labor relation could not even be called by name. But the technocratic consciousness is not based in the same way on the causality of dissociated symbols and unconscious motives, which generates both false consciousness and the power of reflection to which the critique of ideology is indebted. It is less vulnerable to reflection, because it is no longer *only* ideology. For it does not, in the manner of ideology, express a projection of the "good life" (which even if not identifiable with a bad reality, can at least be brought into virtually satisfactory accord with it). Of course the new ideology, like the old, serves to impede making the foundations of society the object of

thought and reflection. Previously, social force lay at the basis of the relation between capitalist and wage-laborers. Today the basis is provided by structural conditions which predefine the tasks of system maintenance: the private form of capital utilization and a political form of distributing social rewards that guarantees mass loyalty. However, the old and new ideology differ in two ways.

First, the capital-labor relation today, because of its linkage to a loyalty-ensuring political distribution mechanism, no longer engenders uncorrected exploitation and oppression. The process through which the persisting class antagonism has been made virtual presupposes that the repression on which the latter is based first came to consciousness in history and *only then* was stabilized in a modified form as a property of the system. Technocratic consciousness, therefore, cannot rest in the same way on collective repression as did earlier ideologies. Second, mass loyalty today is created only with the aid of rewards for *privatized needs*. The achievements in virtue of which the system justifies itself may not in principle be interpreted politically. The acceptable interpretation is immediately in terms of allocations of money and leisure time (neutral with regard to their use), and mediately in terms of the technocratic justification of the occlusion of practical questions. Hence the new ideology is distinguished from its predecessor in that it severs the criteria for justifying the organization of social life from any normative regulation of interaction, thus depoliticizing them. It anchors them instead in functions of a putative system of purposive-rational action.

Technocratic consciousness reflects not the sundering of an ethical situation but the repression of "ethics" as such as a category of life. The common, positivist way of thinking renders inert the frame of reference of interaction in ordinary language, in which domination and ideology both arise under conditions of distorted communication and can be reflectively detected and broken down. The depoliticization of the mass of the population, which is legitimated through technocratic consciousness, is at the same time men's self-objectification in cate-

gories equally of both purposive-rational action and adaptive behavior. The reified models of the sciences migrate into the sociocultural life-world and gain objective power over the latter's self-understanding. The ideological nucleus of this consciousness is *the elimination of the distinction between the practical and the technical*. It reflects, but does not objectively account for, the new constellation of a disempowered institutional framework and systems of purposive-rational action that have taken on a life of their own.

The new ideology consequently violates an interest grounded in one of the two fundamental conditions of our cultural existence: in language, or more precisely, in the form of socialization and individuation determined by communication in ordinary language. This interest extends to the maintenance of intersubjectivity of mutual understanding as well as to the creation of communication without domination. Technocratic consciousness makes this practical interest disappear behind the interest in the expansion of our power of technical control. Thus the reflection that the new ideology calls for must penetrate beyond the level of particular historical class interests to disclose the fundamental interests of mankind as such, engaged in the process of self-constitution.²⁸

If the relativization of the field of application of the concept of ideology and the theory of class be confirmed, then the category framework developed by Marx in the basic assumptions of historical materialism requires a new formulation. The model of forces of production and relations of production would have to be replaced by the more abstract one of work and interaction. The relations of production designate a level on which the institutional framework was anchored only during the phase of the development of liberal capitalism, and not either before or after. To be sure, the productive forces, in which the learning processes organized in the subsystems of purposive-rational action accumulate, have been from the very beginning the motive force of social evolution. But, they do not appear, as Marx supposed, *under all circumstances* to be a po-

tential for liberation and to set off emancipatory movements—at least not once the continual growth of the productive forces has become dependent on scientific-technical progress that has also taken on functions of *legitimating political power*. I suspect that the frame of reference developed in terms of the analogous, but more general relation of institutional framework (interaction) and subsystems of purposive-rational action ("work" in the broad sense of instrumental and strategic action) is more suited to reconstructing the sociocultural phases of the history of mankind.

There are several indications that during the long initial phase until the end of the Mesolithic period, purposive-rational actions could only be motivated at all through ritual attachment to interactions. A profane realm of subsystems of purposive-rational action seems to have separated out from the institutional framework of symbolic interaction in the first settled cultures, based on the domestication of animals and cultivation of plants. But it was probably only in civilizations, that is under the conditions of a class society organized as a state that the differentiation of work and interaction went far enough for the subsystems to yield technically exploitable knowledge that could be stored and expanded relatively independently of mythical and religious interpretations of the world. At the same time social norms became separated from power-legitimating traditions, so that "culture" attained a certain independence from "institutions." The threshold of the modern period would then be characterized by that process of rationalization which commenced with loss of the "superiority" of the institutional framework to the subsystems of purposive-rational action. Traditional legitimations could now be criticized against the standards of rationality of means-ends relations. Concurrently, information from the area of technically exploitable knowledge infiltrated tradition and compelled a reconstruction of traditional world interpretations along the lines of scientific standards.

We have followed this process of "rationalization from above" up to the point where technology and science themselves in the form of a common positivistic way of thinking, articulated as technocratic consciousness, began to take the role of a

substitute ideology for the demolished bourgeois ideologies. This point was reached with the critique of bourgeois ideologies. It introduced ambiguity into the concept of rationalization. This ambiguity was deciphered by Horkheimer and Adorno as the dialectic of enlightenment, which has been refined by Marcuse as the thesis that technology and science themselves become ideological.

From the very beginning the pattern of human sociocultural development has been determined by a growing power of technical control over the external conditions of existence on the one hand, and a more or less passive adaptation of the institutional framework to the expanded subsystems of purposive-rational action on the other. Purposive-rational action represents the form of *active* adaptation, which distinguishes the collective *self-preservation* of societal subjects from the preservation of the species characteristic of other animals. We know how to bring the relevant conditions of life under control, that is, we know how to adapt the environment to our needs culturally rather than adapting ourselves to external nature. In contrast, changes of the institutional framework, to the extent that they are derived immediately or meditately from new technologies or improved strategies (in the areas of production, transportation, weaponry, etc.) have not taken the same form of active adaptation. In general such modifications follow the pattern of *passive* adaptation. They are not the result of planned purposive-rational action geared to its own consequences, but the product of fortuitous, undirected development. Yet it was impossible to become conscious of this disproportion between active and passive adaptation as long as the dynamics of capitalist development remained concealed by bourgeois ideologies. Only with the critique of bourgeois ideologies did this disproportion enter public consciousness.

The most impressive witness to this experience is still the *Communist Manifesto*. In rapturous words Marx eulogizes the revolutionary role of the bourgeoisie:

The bourgeoisie cannot exist without constantly revolutionizing the instruments of production, and

thereby the relations of production, and with them the whole relations of society.

In another passage he writes:

The bourgeoisie, during its rule of scarce one hundred years, has created more massive and more colossal productive forces than have all preceding generations together. Subjection of nature's forces to man, machinery, application of chemistry to industry and agriculture, steam navigation, railways, electric telegraphs, clearing of whole continents for cultivation, canalization of rivers, whole populations conjured out of the ground . . .

Marx also perceives the reaction of this development back upon the institutional framework:

All fixed, fast-frozen relations, with their train of ancient and venerable prejudices and opinions, are swept away, all new-formed ones become antiquated before they can ossify. All that is solid melts into air, all that is holy is profaned, and man is at last compelled to face with sober senses his real conditions of life and his relations with his kind.

It is with regard to the disproportion between the passive adaptation of the institutional framework and the "active subjection of nature" that the assertion that men make their history, but not with will or consciousness, was formulated. It was the aim of Marx's critique to transform the secondary adaptation of the institutional framework as well into an active one, and to bring under control the structural change of society itself. This would overcome a fundamental condition of all previous history and complete the self-constitution of mankind: the end of prehistory. But this idea was ambiguous.

Marx, to be sure, viewed the problem of making history

with will and consciousness as one of the *practical* mastery of previously ungoverned processes of social development. Others, however, have understood it as a *technical* problem. They want to bring society under control in the same way as nature by reconstructing it according to the pattern of self-regulated systems of purposive-rational action and adaptive behavior. This intention is to be found not only among technocrats of capitalist planning but also among those of bureaucratic socialism. Only the technocratic consciousness obscures the fact that this reconstruction could be achieved at no less a cost than closing off the only dimension that is essential, because it is susceptible to humanization, as a structure of interactions mediated by ordinary language. In the future the repertoire of control techniques will be considerably expanded. On Herman Kahn's list of the most probable technical innovations of the next thirty years I observe among the first fifty items a large number of techniques of behavioral and personality change.

30. new and possibly pervasive techniques for surveillance, monitoring and control of individuals and organizations;
33. new and more reliable "educational" and propaganda techniques affecting human behavior—public and private;
34. practical use of direct electronic communication with and stimulation of the brain;
37. new and relatively effective counterinsurgency techniques;
39. new and more varied drugs for control of fatigue, relaxation, alertness, mood, personality, perceptions, and fantasies;
41. improved capability to "change" sex;
42. other genetic control or influence over the basic constitution of an individual.²⁴

A prediction of this sort is extremely controversial. Nevertheless, it points to an area of future possibilities of detaching human behavior from a normative system linked to the grammar of

language-games and integrating it instead into self-regulated subsystems of the man-machine type by means of immediate physical or psychological control. Today the psychotechnic manipulation of behavior can already liquidate the old fashioned detour through norms that are internalized but capable of reflection. Behavioral control could be instituted at an even deeper level tomorrow through biotechnic intervention in the endocrine regulating system, not to mention the even greater consequences of intervening in the genetic transmission of inherited information. If this occurred, old regions of consciousness developed in ordinary-language communication would of necessity completely dry up. At this stage of human engineering, if the end of psychological manipulation could be spoken of in the same sense as the end of ideology is today, the spontaneous alienation derived from the uncontrolled lag of the institutional framework would be overcome. But the self-objectivation of man would have fulfilled itself in planned alienation —men would make their history with will, but without consciousness.

I am not asserting that this cybernetic dream of the instinct-like self-stabilization of societies is being fulfilled or that it is even realizable. I do think, however, that it follows through certain vague but basic assumptions of technocratic consciousness to their conclusion as a negative utopia and thus denotes an evolutionary trend that is taking shape under the slick domination of technology and science as ideology. Above all, it becomes clear against this background that *two concepts of rationalization* must be distinguished. At the level of subsystems of purposive-rational action, scientific-technical progress has already compelled the reorganization of social institutions and sectors, and necessitates it on an even larger scale than before. But this process of the development of the productive forces can be a potential for liberation if and only if it does not replace rationalization on another level. *Rationalization at the level of the institutional framework* can occur only in the medium of symbolic interaction itself, that is, through *removing restrictions on communication*. Public, unrestricted discussion, free from domination, of the suitability and desirability of

action-orienting principles and norms in the light of the socio-cultural repercussions of developing subsystems of purposive-rational action—such communication at all levels of political and repoliticized decision-making processes is the only medium in which anything like "rationalization" is possible.

In such a process of generalized reflection institutions would alter their specific composition, going beyond the limit of a mere change in legitimization. A rationalization of social norms would, in fact, be characterized by a decreasing degree of repressiveness (which at the level of personality structure should increase average tolerance of ambivalence in the face of role conflicts), a decreasing degree of rigidity (which should multiply the chances of an individually stable self-presentation in everyday interactions), and approximation to a type of behavioral control that would allow role distance and the flexible application of norms that, while well-internalized, would be accessible to reflection. Rationalization measured by changes in these three dimensions does not lead, as does the rationalization of purposive-rational subsystems, to an increase in technical control over objectified processes of nature and society. It does not lead per se to the better functioning of social systems, but would furnish the members of society with the opportunity for further emancipation and progressive individuation. The growth of productive forces is not the same as the intention of the "good life." It can at best serve it.

I do not even think that the model of a technologically possible surplus that cannot be used in full measure within a repressively maintained institutional framework (Marx speaks of "fettered" forces of production) is appropriate to state-regulated capitalism. Today, better utilization of an unrealized potential leads to improvement of the economic-industrial apparatus, but no longer *eo ipso* to a transformation of the institutional framework with emancipatory consequences. The question is not whether we completely *utilize* an available or creatable potential, but whether we *choose* what we want for the purpose of the pacification and gratification of existence. But it must be immediately noted that we are only posing this question and cannot answer it in advance. For the solution demands precisely

that unrestricted communication about the goals of life activity and conduct against which advanced capitalism, structurally dependent on a depoliticized public realm, puts up a strong resistance.

A new conflict zone, in place of the virtualized class antagonism and apart from the disparity conflicts at the margins of the system, can only emerge where advanced capitalist society has to immunize itself, by depoliticizing the masses of the population, against the questioning of its technocratic background ideology: in the public sphere administered through the mass media. For only here is it possible to buttress the concealment of the difference between progress in systems of purposive-rational action and emancipatory transformations of the institutional framework, between technical and practical problems. And it is necessary for the system to conceal this difference. Publicly administered definitions extend to *what* we want for our lives, but not to *how* we would like to live if we could find out, with regard to attainable potentials, how we *could* live. Who will activate this conflict zone is hard to predict.

Neither the old class antagonism nor the new type of under-privilege contains a protest potential whose origins make it tend toward the repoliticization of the desiccated public sphere. For the present, the only protest potential that gravitates toward the new conflict zone owing to identifiable interests is arising among certain groups of university, college, and high school students. Here we can make three observations:

1. Protesting students are a privileged group, which advances no interests that proceed immediately from its social situation or that could be satisfied in conformity with the system through an augmentation of social rewards. The first American studies of student activists conclude that they are predominantly not from upwardly mobile sections of the student body, but rather from sections with privileged status recruited from economically advantaged social strata.²⁵

2. For plausible reasons the legitimations offered by the political system do not seem convincing to this group. The welfare-state substitute program for decrepit bourgeois ideol-

ogies presupposes a certain status and achievement orientation. According to the studies cited, student activists are less privately oriented to professional careers and future families than other students. Their academic achievements, which tend to be above average, and their social origins do not promote a horizon of expectations determined by anticipated exigencies of the labor market. Active students, who relatively frequently are in the social sciences and humanities, tend to be immune to technocratic consciousness because, although for varying motives, their primary experiences in their own intellectual work in neither case accord with the basic technocratic assumptions.

3. Among this group, conflict cannot break out because of the extent of the discipline and burdens imposed, but only because of their quality. Students are not fighting for a larger share of social rewards in the prevalent categories: income and leisure time. Instead, their protest is directed against the very category of reward itself. The few available data confirm the supposition that the protest of youth from bourgeois homes no longer coincides with the pattern of authority conflict typical of previous generations. Student activists tend to have parents who share their critical attitude. They have been brought up relatively frequently with more psychological understanding and according to more liberal educational principles than comparable inactive groups.²⁶ Their socialization seems to have been achieved in subcultures freed from immediate economic compulsion, in which the traditions of bourgeois morality and their petit-bourgeois derivatives have lost their function. This means that training for switching over to value-orientations of purposive-rational action no longer includes fetishizing this form of action. These educational techniques make possible experiences and favor orientations that clash with the conserved life form of an economy of poverty. What can take shape on this basis is a lack of understanding in principle for the reproduction of virtues and sacrifices that have become superfluous—a lack of understanding why despite the advanced stage of technological development the life of the individual is still determined by the dictates of professional careers, the ethics of status competition, and by values of possessive individualism

and available substitute gratifications: why the institutionalized struggle for existence, the discipline of alienated labor, and the eradication of sensuality and aesthetic gratification are perpetuated. To this sensibility the structural elimination of practical problems from a depoliticized public realm must become unbearable. However, it will give rise to a political force only if this sensibility comes into contact with a problem that the system cannot solve. For the future I see *one* such problem. The amount of social wealth produced by industrially advanced capitalism and the technical and organizational conditions under which this wealth is produced make it ever more difficult to link status assignment in an even subjectively convincing manner to the mechanism for the evaluation of individual achievement.²⁷ In the long run therefore, student protest could permanently destroy this crumbling achievement-ideology, and thus bring down the already fragile legitimating basis of advanced capitalism, which rests only on depoliticization.

Chapter 5 The Scientification of Politics and Public Opinion

1. Max Weber, *Gesammelte Politischen Schriften*, 2d ed., (Tübingen, 1958), pp. 308 ff.
2. Jacques Ellul, *The Technological Society* (New York, 1967); Helmut Schelsky, *Der Mensch in der wissenschaftlichen Zivilisation* (Cologne-Opladen, 1961).
3. See Helmut Krauch, "Wider den technischen Staat," in *Atomzeitalter*, 1961, No. 9, pp. 201 ff.
4. Hans P. Bahrdt, "Helmut Schelskys technischer Staat," in *Atomzeitalter*, 1961, No. 9, pp. 195 ff.; Jürgen Habermas, "Vom sozialen Wandel akademischer Bildung," in *Universitätsstage 1963* (Berlin, 1963), pp. 165 ff.
5. Hermann Lübbe, "Zur politischen Theorie der Technokratie," in *Der Staat*, 1:7, p. 21.
6. Schelsky, *op. cit.*, p. 22.
7. Hermann Lübbe, "Die Freiheit der Theorie," in *Archiv für Rechts- und Sozialphilosophie*, 1962, pp. 343 ff.
8. See Helmut Krauch, "Technische Information und öffentliches Bewusstsein," in *Atomzeitalter*, 1963, No. 9, pp. 235 ff.
9. See my study *Strukturwandel der Öffentlichkeit*, 3d ed. (Neuwied, 1968).
10. Derek J. de Solla Price, *Science Since Babylon* (New Haven, 1961) and *Little Science, Big Science* (New York, 1963). See also Hans P. Dreitzel, "Wachstum und Fortschritt der Wissenschaft," in *Atomzeitalter*, 1963, No. 11, p. 289.
11. Krauch, "Technische Information," p. 238.
12. *Strategie heute* (Frankfurt am Main, 1962), especially Chapter XII, pp. 292 ff.

Chapter 6 Technology and Science as "Ideology"

1. Herbert Marcuse, "Industrialization and Capitalism in the Work of Max Weber," in *Negations: Essays in Critical Theory*, with translations from the German by Jeremy J. Shapiro (Boston, 1968), pp. 223 f.

2. Herbert Marcuse, "Freedom and Freud's Theory of the Instincts," in *Five Lectures*, translations by Jeremy J. Shapiro and Shierry M. Weber (Boston, 1970), p. 16.

3. *Ibid.*, p. 3.

4. *Ibid.*

5. *Ibid.*

6. Herbert Marcuse, *One-Dimensional Man* (Boston, 1964).

7. *Ibid.*, pp. 166 f.

8. *Ibid.*, p. 236.

9. "This law expresses an intratechnical occurrence, a process that man has not willed as a whole. Rather, it takes place, as it were, behind his back, instinctively extending through the entire history of human culture. Furthermore, in accordance with this law, technology cannot evolve beyond the stage of the greatest possible automation, for there are no further specifiable regions of human achievement that could be objectified." Arnold Gehlen, "Anthropologische Ansicht der Technik," in *Technik im technischen Zeitalter*, Hans Freyer *et al.*, eds. (Düsseldorf, 1965).

10. Marcuse, *One-Dimensional Man*, p. 235.

11. *Ibid.*, p. 154.

12. On the context of these concepts in the history of philosophy, see my contribution to the *Festschrift* for Karl Löwith: "Arbeit und Interaktion: Bemerkungen zu Hegels Jenseiter Realphilosophie," in *Natur und Geschichte. Karl Löwith zum 70. Geburtstag*, Hermann Braun and Manfred Riedel, eds. (Stuttgart, 1967). This essay is reprinted in *Technik und Wissenschaft als 'Ideologie'* (Frankfurt am Main, 1968) and will appear in English in *Theory and Practice*, to be published by Beacon Press.

13. Gerhard E. Lenski, *Power and Privilege: A Theory of Social Stratification* (New York, 1966).

14. See Peter L. Berger, *The Sacred Canopy* (New York, 1967).

15. See my study *Erkenntnis und Interesse* (Frankfurt am Main, 1968), to be published by Beacon Press as *Cognition and Human Interests*.

16. See Leo Strauss, *Natural Right and History* (Chicago, 1963); C. B. MacPherson, *The Political Theory of Possessive Individualism* (London, 1962); and Jürgen Habermas, "Die klassische Lehre von der Politik in ihrem Verhältnis zur Sozialphilosophie," in *Theorie und Praxis*, 2d ed. (Neuwied, 1967), to appear in *Theory and Practice*.

17. See Jürgen Habermas, "Naturrecht und Revolution," in *Theorie und Praxis*.

18. Claus Offe, "Politische Herrschaft und Klassenstrukturen," in Gisela Kress and Dieter Senghaas, eds., *Politikwissenschaft* (Frankfurt am Main, 1969). The quotation in the text is from the original manuscript, which differs in formulation from the published text.

19. The most recent explication of this is Eugen Löbl, *Geistige Arbeit—die wahre Quelle des Reichthums*, translated from the Czech by Leopold Grünwald (Vienna, 1968).

20. See Helmut Schelsky, *Der Mensch in der wissenschaftlichen Zivilisation* (Cologne-Opladen, 1961); Jacques Ellul, *The Technological Society* (New York, 1967); and Arnold Gehlen, "Über kulturelle Kristallisierungen," in *Studien zur Anthropologie und Soziologie* (Berlin, 1963), and "Über kulturelle Evolution," in *Die Philosophie und die Frage nach dem Fortschritt*, M. Hahn and F. Wiedmann, eds. (Munich, 1964).

21. To my knowledge there are no empirical studies concerned specifically with the propagation of this background ideology. We are dependent on extrapolations from the findings of other investigations.

22. Offe, op. cit.

23. See my essay "Erkenntnis und Interesse" in *Technik und Wissenschaft als 'Ideologie.'* It will appear in English as an appendix to *Cognition and Human Interests*.

24. Herman Kahn and Anthony J. Wiener, "The Next Thirty-Three Years: A Framework for Speculation," in *Toward the Year 2000: Work in Progress*, Daniel Bell, ed. (Boston, 1969), pp. 80 f.

25. Seymour Martin Lipset and Philip G. Altbach, "Student Politics and Higher Education in the U.S.A." in *Student Politics*, Seymour Martin Lipset, ed. (New York, 1967); Richard W. Flacks, "The Liberated Generation: An Exploration of the Roots of Student Protest," in *Journal of Social Issues*, 23:3, pp. 52-75; and Kenneth Keniston, "The Sources of Student Dissent," *ibid.*, pp. 108 ff.

26. In Flacks' words, "Activists are more radical than their parents; but activists' parents are decidedly more liberal than others of their status. . . . Activism is related to a complex of values, not ostensibly political, shared by both the students and their parents. . . . Activists' parents are more 'permissive' than parents of non-activists."

27. See Robert L. Heilbroner, *The Limits of American Capitalism* (New York, 1966).